



A view of different movement visualizations. (Image: HKB research team)

Research Area Communication Design

## PedVis – Pedestrian Flow Visualizations

**Abstract:** More and more people are using public transport. The Swiss Federal Railways (SBB) is expanding its railway stations and redesigning them so that all passengers will in future still reach their destinations safely and quickly. In this context, the depiction, planning and simulation of people flows (customer flows, movement patterns) are of increasing importance. This project will open up new access points in this field. Starting with seven topic clusters, different aspects of people flows will be analysed and depicted anew, based on a comprehensive collection of images. The prototypes for new visualizations developed from this will be validated using a Delphi survey of expert opinions and tested for their future potential. The SBB will then be presented with a catalogue of recommendations with all the visualization models and a practice manual.

**Introduction:** Influencing people flows is becoming increasingly important on account of user numbers and limited space in the halls and surfaces of railway stations. The paths taken by travellers and shoppers can be influenced by measures in the realms of structure, design, atmosphere and operations, as also through customer information and customer guidance. For these interdisciplinary activities, models and simulations of people flows and installations are used that often remain incomprehensible outside a small circle of experts. There is a need – inadequately met at present – for appropriate, publicfriendly depictions of ideal and actual spatial uses that are suitable for other target groups.

**Methods:** The research design encompasses three phases: 1) A design analysis and inventory of existing visual depictions and knowledge visualizations; 2) Developing practicable prototypes for context-appropriate knowledge visualizations; 3) Monitoring the added value of the prototypes and the potential of alternative visualization models when compared to current solutions. For this, a multilevel Delphi survey was carried out at the SBB among 14 authors, users and recipients of visualizations. The results of this survey help us to improve the prototypes and to develop recommendations that can be summarized in a manual for the visualization of people flows.

**Results:** A thematic classification has been developed of the visual language of the SBB on the topic of 'people flows'. The inventory of this depictional world of the SBB will be accompanied by the opinions on current visualization practices of key persons from different functional areas. In this manner, we can prioritize subject areas for subsequent work (subject clusters). The focus of the rest of our work has been on the design development of prototypes to depict the different parameters of spaces and movement, and their impact on each other in specific time windows. Here it was necessary to pay greater attention to linkages of the subject clusters with the terminology of existing guidelines ('Assessing public facilities and development projects from the perspective of people flows') and the important time dimension. This led to the identification of new subject clusters ('Connection times of people types' and 'Platform occupancy') and to the derivation of further visualization prototypes ('Spacetime axis' and 'Platform occupancy topology'). Visualizations were subsequently prepared and the online Delphi expert survey was carried out. To conclude, the findings gained from the project – especially the findings of the Delphi survey – were turned into a manual that demonstrates the variety of possible visualizations and describes their respective strengths and possible applications.

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